

CLAIMS

We claim:

5 1. An inspection device for inspecting projections on a substrate such
as bumps on microelectronics such as semiconductors:
 a light source; and
 a non-laser confocal sensor.

10 2. The inspection device of claim 1 further comprising a camera for
collecting focused light.

15 3. The inspection device of claim 2 wherein the non-laser confocal
sensor includes a pellicle beamsplitter for receiving light from the light source
and redirecting said light.

 4. The inspection device of claim 3 wherein the non-laser confocal
sensor includes an aperture array for receiving light from the pellicle
beamsplitter.

20 5. The inspection device of claim 3 wherein the non-laser confocal
sensor includes a dual telecentric object reimager including a plurality of lenses;

 6. The inspection device of claim 3 wherein the non-laser confocal
sensor includes a telecentric camera imager including a plurality of lenses.

25 7. The inspection device of claim 3 wherein the non-laser confocal
sensor includes:

 an aperture array for receiving light from the pellicle beamsplitter;
 a dual telecentric object reimager including a plurality of lenses; and
30 a telecentric camera imager including a plurality of lenses.

 8. An inspection device for inspecting projections on a substrate such
as bumps on microelectronics such as semiconductors:
 a light source; and
35 a white light confocal sensor.

9. The inspection device of claim 8 further comprising a camera for collecting focused light.

10. The inspection device of claim 9 wherein the confocal sensor includes a pellicle beamsplitter for receiving light from the light source and redirecting said light.

11. The inspection device of claim 10 wherein the confocal sensor includes an aperture array for receiving light from the pellicle beamsplitter.

12. The inspection device of claim 10 wherein the confocal sensor includes a dual telecentric object reimager including a plurality of lenses;

13. The inspection device of claim 10 wherein the confocal sensor includes a telecentric camera imager including a plurality of lenses.

14. The inspection device of claim 10 wherein the confocal sensor includes:

- an aperture array for receiving light from the pellicle beamsplitter;
- a dual telecentric object reimager including a plurality of lenses; and
- a telecentric camera imager including a plurality of lenses.

15. The inspection device of claim 10 wherein light source is one of a halogen light source, an arc light, light emitting diodes including white or colored light emitting diodes, and fluorescent lights.

16. An inspection device for inspecting projections on a substrate such as bumps on microelectronics such as semiconductors:

- a non-laser light source; and
- a confocal sensor.

17. The inspection device of claim 16 further comprising a camera for collecting focused light, and a pellicle beamsplitter for receiving light from the light source and redirecting said light.

18. The inspection device of claim 17 wherein the confocal sensor

includes:

- an aperture array for receiving light from the pellicle beamsplitter;
- a dual telecentric object reimager including a plurality of lenses; and
- a telecentric camera imager including a plurality of lenses.

5

19. The inspection device of claim 18 wherein light source is one of a halogen light source, an arc light, light emitting diodes including white or colored light emitting diodes, and fluorescent lights.

10

20. The inspection device of claim 16 wherein light source is one of a halogen light source, an arc light, light emitting diodes including white or colored light emitting diodes, and fluorescent lights.

15